SN54F157A, SN74F157A
QUADRUPLE 2-LINE TO 1-LINE DATA SELECTORS/MULTIPLEXERS

SDFS053A − MARCH 1987 − REVISED OCTOBER 1993

- **Buffered Inputs and Outputs**
- **Package Options Include Plastic Small-Outline Packages, Ceramic Chip Carriers, and Standard Plastic and Ceramic 300-mil DIPs**

description

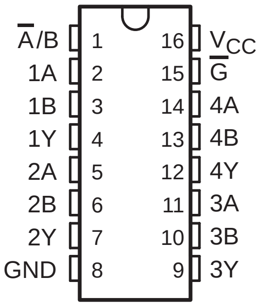
The ′F157A is a quadruple 2-input data selector/multiplexer featuring a common strobe ($\overline{G}$) input. When the strobe is high, all outputs are low. When the strobe is low, a 4-bit word is selected from one of two sources and is routed to the four outputs. The ′F157A provides true data.

The SN54F157A is characterized for operation over the full military temperature range of −55°C to 125°C. The SN74F157A is characterized for operation from 0°C to 70°C.

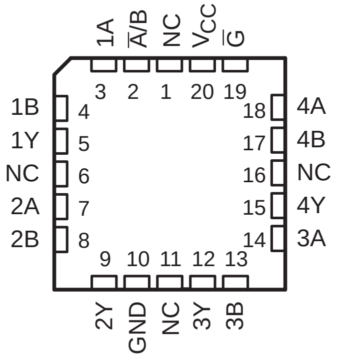
FUNCTION TABLE

INPUTS				OUTPUT Y
$\overline{G}$	$\overline{A}$/B	A	B	
H	X	X	X	L
L	L	L	X	L
L	L	H	X	H
L	H	X	L	L
L	H	X	H	H

SN54F157A . . . J PACKAGE
SN74F157A . . . D OR N PACKAGE
(TOP VIEW)

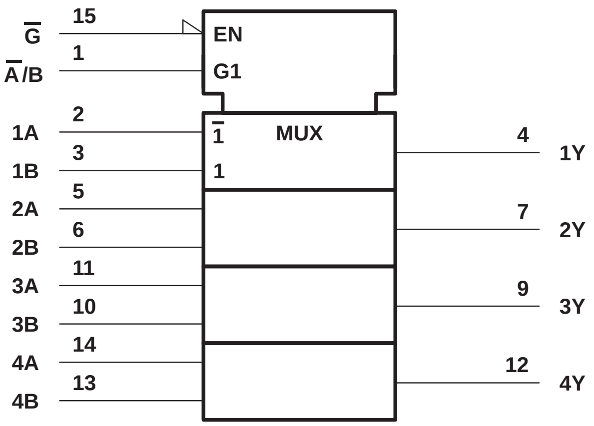


SN54F157A . . . FK PACKAGE
(TOP VIEW)



NC − No internal connection

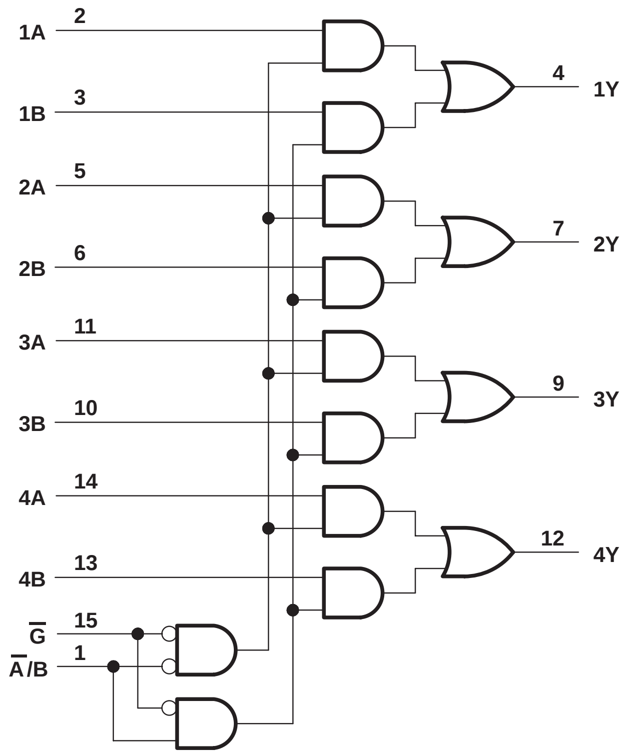
logic symbol†



† This symbol is in accordance with ANSI/IEEE Std 91-1984 and IEC Publication 617-12.

Pin numbers shown are for the D, J, and N packages.

logic diagram (positive logic)



absolute maximum ratings over operating free-air temperature range (unless otherwise noted)‡

Supply voltage range, V_{CC}		−0.5 V to 7 V
Input voltage range (see Note 1)		−1.2 V to 7 V
Input current range		−30 mA to 5 mA
Voltage range applied to any output in the high state		−0.5 V to V_{CC}
Current into any output in the low state		40 mA
Operating free-air temperature range:	SN54F157A	−55°C to 125°C
	SN74F157A	0°C to 70°C
Storage temperature range		−65°C to 150°C

‡ Stresses beyond those listed under “absolute maximum ratings” may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions beyond those indicated under “recommended operating conditions” is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

NOTE 1: The input voltage rating may be exceeded provided that the input current rating is observed.

recommended operating conditions

		SN54F157A			SN74F157A			UNIT
		MIN	NOM	MAX	MIN	NOM	MAX	
V_{CC}	Supply voltage	4.5	5	5.5	4.5	5	5.5	V
V_{IH}	High-level input voltage	2			2			V
V_{IL}	Low-level input voltage			0.8			0.8	V
I_{IK}	Input clamp current			−18			−18	mA
I_{OH}	High-level output current			−1			−1	mA
I_{OL}	Low-level output current			20			20	mA
T_A	Operating free-air temperature	−55		125	0		70	°C

electrical characteristics over recommended operating free-air temperature range (unless otherwise noted)

PARAMETER	TEST CONDITIONS		SN54F157A			SN74F157A			UNIT
			MIN	TYP[†]	MAX	MIN	TYP[†]	MAX	
V_{IK}	V_{CC} = 4.5 V,	I_I = −18 mA			−1.2			−1.2	V
V_{OH}	V_{CC} = 4.5 V,	I_{OH} = − 1 mA	2.5	3.4		2.5	3.4		V
	V_{CC} = 4.75 V,	I_{OH} = − 1 mA				2.7			
V_{OL}	V_{CC} = 4.5 V,	I_{OL} = 20 mA		0.3	0.5		0.3	0.5	V
I_I	V_{CC} = 5.5 V,	V_I = 7 V			0.1			0.1	mA
I_{IH}	V_{CC} = 5.5 V,	V_I = 2.7 V			20			20	μA
I_{IL}	V_{CC} = 5.5 V,	V_I = 0.5 V			− 0.6			− 0.6	mA
I_{OS}[‡]	V_{CC} = 5.5 V,	V_O = 0	−60		−150	−60		−150	mA
I_{CC}	V_{CC} = 5.5 V,	V_I = 4.5 V		15	23		15.5	23	mA

[†] All typical values are at V_{CC} = 5 V, T_A = 25°C.

[‡] Not more than one output should be shorted at a time, and the duration of the short circuit should not exceed one second.

switching characteristics (see Note 2)

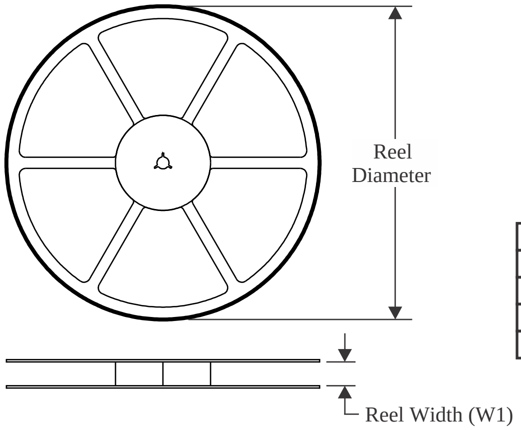
PARAMETER	FROM (INPUT)	TO (OUTPUT)	V_{CC} = 5 V, C_L = 50 pF, R_L = 500 Ω, T_A = 25°C			V_{CC} = 4.5 V to 5.5 V, C_L = 50 pF, R_L = 500 Ω, T_A = MIN to MAX[§]				UNIT
			′F157A			SN54F157A		SN74F157A		
			MIN	TYP	MAX	MIN	MAX	MIN	MAX	
t_{PLH}	$\overline{A}$/B	Y	3.2	6.6	10	3.2	12	3.2	11	ns
t_{PHL}			2.2	4.6	7	2.2	9	2.2	8	
t_{PLH}	$\overline{G}$	Y	4.2	6.6	9.5	4.2	13	4.2	11	ns
t_{PHL}			1.7	4.1	6.5	1.7	7.5	1.7	7	
t_{PLH}	A or B	Y	1.7	4.1	6	1.7	7.5	1.7	6.5	ns
t_{PHL}			1.7	3.6	5.5	1	7.5	1.2	7	

[§] For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions.

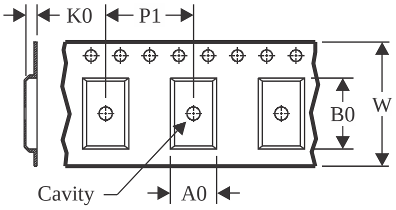
NOTE 2: Load circuits and voltage waveforms are shown in Section 1.

TAPE AND REEL INFORMATION

REEL DIMENSIONS

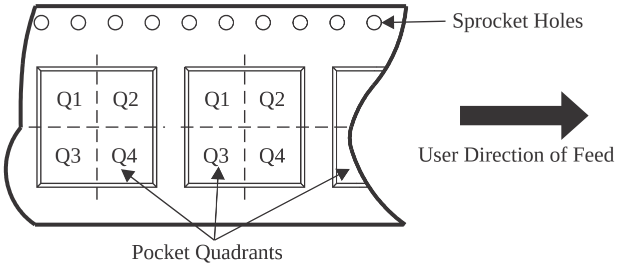


TAPE DIMENSIONS



A0	Dimension designed to accommodate the component width
B0	Dimension designed to accommodate the component length
K0	Dimension designed to accommodate the component thickness
W	Overall width of the carrier tape
P1	Pitch between successive cavity centers

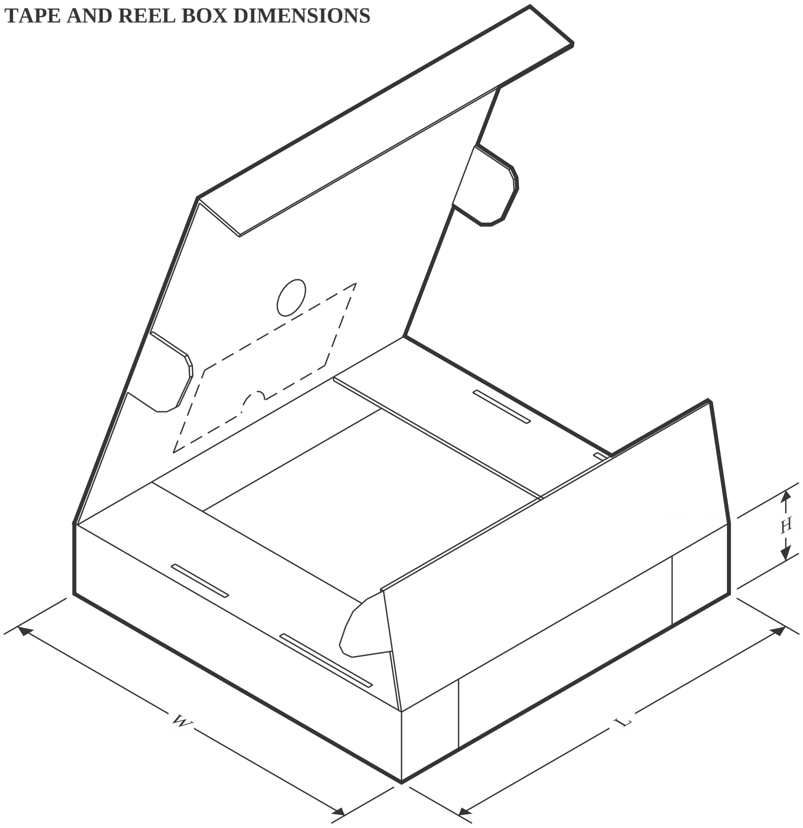
QUADRANT ASSIGNMENTS FOR PIN 1 ORIENTATION IN TAPE



*All dimensions are nominal

Device	Package Type	Package Drawing	Pins	SPQ	Reel Diameter (mm)	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P1 (mm)	W (mm)	Pin1 Quadrant
SN74F157ADR	SOIC	D	16	2500	330.0	16.4	6.5	10.3	2.1	8.0	16.0	Q1
SN74F157ANSR	SO	NS	16	2000	330.0	16.4	8.2	10.5	2.5	12.0	16.0	Q1

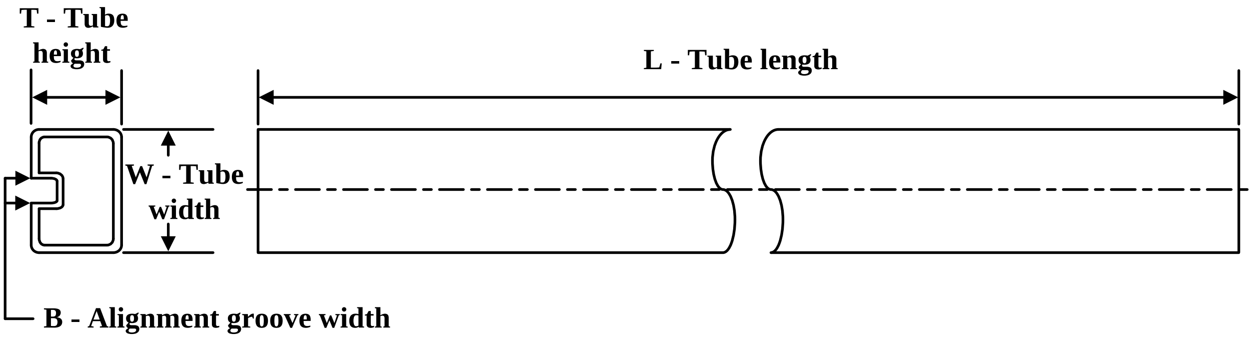
TAPE AND REEL BOX DIMENSIONS



*All dimensions are nominal

Device	Package Type	Package Drawing	Pins	SPQ	Length (mm)	Width (mm)	Height (mm)
SN74F157ADR	SOIC	D	16	2500	340.5	336.1	32.0
SN74F157ANSR	SO	NS	16	2000	356.0	356.0	35.0

TUBE



*All dimensions are nominal

Device	Package Name	Package Type	Pins	SPQ	L (mm)	W (mm)	T (µm)	B (mm)
SN74F157AN	N	PDIP	16	25	506	13.97	11230	4.32
SN74F157AN	N	PDIP	16	25	506	13.97	11230	4.32

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